
Equipment description

Add-on Data Module

The ADM is packaged in a molded chameleon gray plastic case 6.25 in (159 mm) wide. It has the same profile as the basic SL-1 telephone set and is equipped with a black faceplate.

The ADM is a microprocessor-controlled module which provides advanced data transmission features over a wide range of data rates. It eliminates unnecessary analog conversions between data terminal equipment and the Meridian 1 switching network by using digital transmission over existing 2-pair SL-1 set wire.

The ADM replaces base-band modems, acoustical couplers, and limited distance data sets for in-house data transmission activities. It extends several SL-1 station calling features to data calling use when installed on a standard SL-1 telephone. The ADM also provides switched, dial-up access from multiple in-house terminal equipment to shared dedicated or voice-grade modems for external data calling.

QMT7 ADM

The QMT7 provides asynchronous, half or full-duplex operation over 2- or 4-wire transmission lines and, depending on the terminal or modem used, transmission speeds of 50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200 and 9600 bps. It accommodates a serial character data format of 5, 6, 7 or 8 data bits and 1, 1.5 or 2 stop bits (or as defined by the data unit).

The ADM is compatible with Bell 103/212/202 compliant modems and provides an EIA RS-232-C interface to data terminal equipment or modems. It converts the signals from the data equipment to full-duplex digital (128 kbits/sec, BPRZ encoded) to send to the Data Line Card (DLC) in the Meridian 1.

The ADM provides for re-down-line loading of RS-232 control signals. It also provides the following Data Call features:

- Flexible numbering plan for data stations
- Auto-answer capability
- Originate capability
- Voice path integrity in ADM power loss situations
- Alternate or simultaneous voice and data calling per data station
- Distinctive buzz for incoming data calls
- Distinctive connect tone
- Power Fail Protection

Note: Not all of the data modules have these features, i.e., not all have distinctive buzz, alternate or simultaneous voice and data capability. See module specifications.

The in-house error rate should be no greater than 1 error x 10^{-7} bits and the error rate over trunks should be no greater than 1 error x 10^{-5} bits (modem dependent).

Co-located ADM

When installed in the co-located mode, the ADM mounts on the right side of the telephone as the last add-on module.

- The ADM supports all data calling activities where the ability to originate and receive both data and voice calls is required.
- All co-located ADM modules permit the simultaneous voice and data transmission through a single telephone.
- The telephone calling features are available for data calls when a co-located ADM is used. These features are assigned to the ADM as with a telephone.
- The telephone calling features assignable to the ADM for data calls are located on and accessed from the key/lamp strip or through keyboard dialing when applicable.
- The ADM connects to the SL-1 set via two pair of leads. One pair extends the signaling leads from the SL-1 telephone to the ADM. The other pair connects the ADM to the signaling logic in the telephone.
- A data terminal or computer is connected to the ADM via a 25-pin connector on the rear of the module. This interface conforms electrically to EIA RS-232 standard and mechanically to ISO-2110.

Stand-alone ADM

The ADM can also be installed in a stand-alone mode to answer (cannot originate calls) calls as required for data-only in-house calling applications (for example, to support data service units, modems, printers, or computer ports) and for receiving incoming calls from trunks to a modem pool or to a dedicated facility.

In the stand-alone mode, an SL-1 telephone is not required. The ADM is in an answer-only mode, the same as it is when interfaced to a computer port or front end processor.

Modem Pool ADM

The ADM may be configured as modem pools (see “Features and services” on page 41). The Outbound Modem Pool is accommodated by outgoing standard voice grade or conditioned lines and provides for asynchronous or synchronous transmission. The Inbound Modem Pool supports synchronous modems to single hosts. Only asynchronous modems are supported for access to multiple or remote hosts. Modem pools of different types (speed or transmission mode) must be kept separate.

Note: Offices that are equipped with the AMP feature do not require separate inbound and outbound modem pools. The other pooling requirements still apply.

User controls, indicators, and settings

The ADM has three key/lamp data call controls and three transmission and one power status lamp indicators, plus user-selectable transmission speed and parameter option switches.

The ADM contains internal option switches and jumpers selected according to customer configuration, and a switch for setting the Voice Frequency Directory Number (VFDN). The VFDN is used to set up the connection through the Meridian 1 from the analog side of the pooled modem to the outgoing trunk.

The location of all ADM controls, indicators, and option selectors is shown in Figure 7. All controls and indicators are described in Table 1. Both option selectors, the speed-setting knob, and option switches are described in Table 2.

Configurations

Each ADM is entered in the Meridian 1 office data in the same manner as an SL-1 telephone, using LD 11. Instructions for assigning DDN, data hunt groups, and key/lamp features are included in *X11 input/output guide* (553-3001-400).

Operating Distances

The ADM allows different maximum separation distances from the Meridian 1 peripheral equipment and computers depending upon gauge of wire used to make the connections. Maximum end-to-end distance between ADM can be up to 8000 ft (2440 m) on 22 gauge or 7,000 ft (2134 m) on 24-gauge wire. A computer or terminal can be located as far from the ADM as is consistent with EIA RS-232 loading specifications.

Miscellaneous

The ADM provides loopback testing maintenance diagnostics that are inherent in the Meridian 1 software to the called data module.

The ADM derives 24 V ac, 50–60 Hz power from a local plug-in 110 or 220 V ac transformer.

Note: A 100 V ac transformer is available for use in Japan.

Table 1
ADM controls and indicators

Controls and indicators	Definition
DATA key	Data DN key—used for originating and answering data calls
Lamp	Data DN lamp—indicates the call state of DDN: ON—active call OFF—idle WINK—incoming call
MODEM CONTROL key	Used during call setup to a remote device
Lamp	Indicates MODEM CONTROL key status: ON—modem in use OFF—no modem in use WINK—modem reserved
DATA SHIFT key	Used to shift companion SL-1 telephone from voice mode to data mode; feature-key activations made on an SL-1 telephone during data mode then relates to the DDN
Lamp	Indicates the activation of DATA SHIFT key and operating mode of SL-1 telephone: ON—SL-1 set in data mode OFF—SL-1 set in voice mode
RESET	Located on the rear of vintage B and later ADM—used to effect initialization
CONNECT lamp	Indicates if a connection is established with a called ADM: ON—connection established OFF—no connection
RECEIVE lamp	Indicates if the ADM is receiving data from the called facility: ON—ADM receiving data (flashes at data rate) OFF—ADM not receiving data
SEND lamp	Indicates if the ADM is transmitting data to the called facility: ON—ADM sending data (flashes at data rate) OFF—ADM not sending data
POWER lamp	Indicates if local power is being supplied to the ADM: ON—power up OFF—power down

Table 2
ADM user option selectors (Part 1 of 3)

Selector	Description
Speed setting knob (S2)	A 16-position switch used to select transmission speed (bits per second) of a data call (Notes 3 and 4).
Option switches (S3)	The eight switches allow selection of data code options and operating modes that match the receive and transmit characteristics of the receiving data terminal.
Asynchronous ADM Operation	The asynchronous ADM has an 8-bit transmitter/receiver. To handle all of the combinations of codes it might receive or need to transmit, which might be less or greater than 8 bits, the ENH-INH and EVEN-ODD switches allow it to add or delete bits to make the code always equal 8 bits. Most devices today use the 8-bit code, so the INH and 8 CODE switches are normally operated. When INH is operated, the EVEN-ODD switch setting is ignored.
ENH—INH	ENH allows the parity check; this allows the addition of a non-information bit to the data, making the number of ones in a grouping of binary bits always even or odd. INH prevents the addition of the parity bit.
EVEN—ODD	This determines the parity check type, EVEN, when the number of binary ones in a data word is always maintained as an even number or ODD, when the number of ones in the data word is odd.
HDX—FDX	Provides for the transmission aspects: HDX when half-duplex direction of transmission is under dynamic control of EIA leads CTS, RTS, and CD (this switch provides local carrier monitoring of local request-to-send to ensure compatibility with 2-wire modem); FDX when full-duplex communications is required.
7—8 CODE	Transmission codes use different character lengths and different start/stop bit configurations. This switch and the selection switch (S4) provide for 5 through 8 character codes (Note 1).
1—2 STOP	This switch and selection switch (S4) provide the correct stop bits to match the required code configuration (Note 1).

Table 2
ADM user option selectors (Part 2 of 3)

Selector	Description
2W—4W	The 2W position provides for local echo while the 4W position does not provide for echo. The QMT8 labels this switch as Echo—No Echo.
ECHO—NO ECHO	This is a QMT8 switch assignment: The Echo position provides for local echo, while the No Echo position does not provide for echo from the ADM.
MANUAL—AUTO ANS	This establishes how calls to the ADM are answered: manually or automatically.
OFF—LOOPBACK	This switch is used by maintenance personnel to test ADM using the loopback setting. The switch is OFF during regular transmissions (Note 2).
Synchronous ADM Operation (QMT8 and higher)	
S3.1 and S3.2	(Not used by synchronous QMT8 or QMT12)
HDX—FDX	Provides for the transmission aspects: HDX when half-duplex direction of transmission is under dynamic control of EIA leads CTS, RTS, and CD (this switch provides local carrier monitoring of local request-to-send to ensure compatibility with 2-wire modem); FDX when full-duplex communications is required.
Modem—Network	This is a synchronous QMT8/QMT12 switch assignment: Modem is used (clocks are not synchronized) for all connections except for connections to a digital network; Network is used when the transmit and receive clocks are jointly synchronized.
Ext clock—Int clock	This is a synchronous QMT8/QMT12 switch assignment: Ext clock is used when a device connected to the ADM controls the transmission clock; Int clock is used when the Meridian 1 controls the transmission clock.

Table 2
ADM user option selectors (Part 3 of 3)

Selector	Description
Echo—No echo	This is a synchronous QMT8/QMT12 switch assignment: The Echo position provides for local echo while the No Echo position does not provide for echo from the ADM.
Manual—Auto Ans	This establishes how calls to the ADM are answered: manually or automatically.
Off—Loopback	This switch is used by maintenance personnel to test ADM using the loopback setting. The switch is OFF during regular transmissions (Note 2).
Note 1: Selection switch (S4) is located beneath the faceplate and should be set by maintenance personnel only. The QMT7 (S4) selection switches are used to set up for 5- or 6-bit code, for 1.5 stop bits, and to force DTR and MI/MIC modem control on or off. The QMT8/QMT11/QMT12 (S4) selection switches are used to set up for Synchronous or Asynchronous modes, force DTR on or off, set MI/MIC modem control on or off, and to encode for normal (7 or 8 bit), 5-bit, 6-bit, and hotline (with 7- or 8-bit only) operation. The 1.5 bit option is provided (in the asynchronous mode only) when the speed setting switch is set at 134.5 bps. Note 2: Use of the LOOPBACK setting is recommended only for maintenance personnel. Instructions for use of the LOOPBACK setting are given in <i>Meridian data features operation and tests</i> (553-2731-300). Note 3: The control label under the flip lid has all speeds shown. Speeds above 19.2 kps are in a different color for informational purposes. At speeds above 20 kbps, the EIA cable lengths (DTE or DCE to ADM) are speed-dependent and must be shorter than 50 ft (15 m); e.g., in the 5 to 8 ft (1.5 to 2.5 m) range at 56 kbps. Note 4: The serial number and Q-code label on the bottom of the ADM contains the interface information and provides a reference to the connector type.	

QMT8 SADM

The QMT8 has the same profile as the QMT7, but it supports both asynchronous and synchronous data transmission. A service switch is used to change from one mode of transmission to the other. The QMT8 can operate in the same configuration as the QMT7.

The QMT8, when operating in the asynchronous mode, can operate at 19200 bps in addition to speeds specified for the QMT7. The QMT8 also supports the inbound modem pooling and keyboard dialing features.

When operating in the synchronous mode, the QMT8 can transmit data at 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 38400, 40800, 48000, or 56000 bps. Some of the QMT8 controls are different and are defined in [Table 2](#).

Note: For QMT8 with RS-232 interface at speeds above 20 kbps, the EIA cable lengths (DTE or DCE to ADM) are speed-dependent and must be shorter than 50 ft (15 m); e.g., in the 5 to 8 ft (1.5 to 2.5 m) range at 56 kbps.

QMT12 ADM

The QMT12 (V.35) ADM has the same profile as the QMT7 and QMT8. However, the QMT12 provides high-speed V.35 CCITT synchronous instead of a RS-232 interface to data terminals or modems. The QMT12 interface conforms electrically to the CCITT V.35 standard and mechanically to ISO-2110. The QMT12 provides for the same data transmission speeds as the QMT8 synchronous ADM; 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 38400, 40800, 48000, or 56000 bps. The controls and option selectors are similar to the QMT8 and are described in [Tables 1](#) and [2](#).

Note: The RS-232-C (QMT8) DCE/DTE interface is normally used for low-speed data rates (up to 19.2 kbps) while the V.35 (QMT12) interface is used when high-speed (38.4 to 56.0 kbps) data rates are required. However, synchronous terminals operate with whatever clock they receive. Therefore, a user with a V.35 terminal can set the speed switch to a low speed and call an RS-232 modem. A different color is used on the speed indicator card of the QMT12 to indicate the higher speeds.

The V.35 CCITT interface should only be used in the synchronous operating mode.

The QMT12 supports four basic modes of synchronous data transmission operation:

- terminal to terminal
- terminal to digital network
- terminal to modem
- terminal loopback test

While the QMT12 is equipped with a V.35 CCITT interface, wire changes within the module can be used to establish an RS-232-C interface.

Note: Unless stated otherwise, all further ADM references in this publication imply QMT7, QMT8, and QMT12.

Data Line Card

The DLC is located in a Peripheral Equipment (PE) shelf. It encodes information streams received from the ADM and routes this information through the Meridian 1 switching network to the called data facility (computer or terminal).

The QPC311 DLC supports two SL-1 telephones and two ADMs, either in independent or paired operation. The DLC data ports can support two MCDS-AC ports, two CIC ports, two ASIMs or two CIMs. Microprocessor control allows the DLC to separate incoming voice signals, data signals, and actual data, and route this information through the switching network.

The DLC contains an option switch used to link or isolate operation of each SL-1/ADM circuit pair as required and jumper positions for wire gauge selection.

4-Port Data Line Card

The 4PDLC is located in a Peripheral Equipment (PE) shelf. It meets the physical and electrical specifications of any DLC to data-module interface and provides access to network channels for data information. The 4PDLC is used in applications that require a large concentration of data ports.

It provides four SL-1 data only ports and is primarily designed to serve MCDS-AC, ASIM, CIM, CIC, and stand-alone ADM.

The 4PDLC does not support calls that involve voice ports such as in outbound modem pool calls. The 4PDLC accepts both voice and data call signals but does not distinguish between them and therefore cannot be used in cases where both types of signals are present.

The 4PDLC has one LED indicator on the faceplate that is lit when the card is disabled.

Modem Pool Line Card

Outbound Modems

The MPLC (QPC353) contains four ports and is used exclusively in asynchronous outbound modem pool configurations to support originate modems. It provides the Voice Frequency Directory Number (VFDN) for call connection on the analog side of an outbound pooled modem. The synchronous outbound modem pools use the regular QPC60 line card (or the double density line card [QPC452] that contains eight instead of four ports).

The MPLC is used with originate/answer modems. There are four identical circuits on each card and they prevent ring voltages from being applied to ensure that each modem remains in the originate mode during call setup.

Inbound Modems

The regular 500-set (or double density) line card is used for asynchronous and synchronous inbound modem pool configurations.

Supplementary power unit

Each stand-alone and some co-located ADMs must be powered from a supplementary power unit. The supplementary power unit used is a wall or floor-mounted plug-in transformer that supplies 24 V ac $\pm 10\%$.

In the event that the local power to a co-located ADM fails, an optional Power Failure Transfer (PFT) capability can be implemented to ensure that the SL-1 telephone continues to function. Individual and/or zone PFT can be used.

RS-232 cord assemblies (NE-25MQ2A)

The NE-25MQ2A (A0237451) cord assembly is a 16 ft (5 m), 25-wire cable, connectorized at both ends. It provides electrical interface and proper configuration of control signals between the ADM and Data Terminal Equipment (DTE). A shorter 6 ft (1.8 m) NE-M25QB (A0273211) cord may be used instead of the longer cord.

Modem pool cable (QCAD5A)

The QCAD5A connector cable (A0277406) is similar to the NE-25MQ2A cord assembly, but includes a special relay and associated wiring to provide the necessary electrical interface and proper configuration of operating modes of the attached modem. This cable is only used for asynchronous outbound modem pools.

QMT9 AIM

The Asynchronous Interface Module (AIM) is packaged in a chameleon ash-colored plastic housing that is 12.5 in (317.5 mm) long, 7.5 in (190 mm) wide. The module has a 4° slope with a front height of 1.75 in (44.5 mm) and a rear height of 2.75 in (70 mm). It weighs approximately 2 lb (1 kg).

The AIM may be desktop or wall mounted and is used to originate or answer data calls. It supports keyboard dialing.

Features

The AIM is a stand-alone module, equipped to transmit and receive data. It meets the DTE/DCE interface requirements of the EIA RS-232-C standard. The electrical characteristics of the interface to the associated Asynchronous Interface Line Card (AIRC) meets the EIA RS-422 requirements. The AIM provides substantial electrical isolation between the RS-232 and RS-422 interfaces.

The AIM transmits data at 110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 bps. Speeds are determined by an autobauding procedure in the AIRC.

Note: With the QPC430E and later vintage AIRC, many of the features of AT-type dialing are supported, as well as the set relocation feature. See the AIM/AIRC User Guide for details. For more details, refer to *Japanese features and services* (553-2001-100), but disregard all references to Manual Answer.

A standard 500/2500 telephone may be plugged into the rear of the AIM into the phone jack. This telephone then operates through the AIM line cord to a standard 500-set line card in the Meridian 1.

Controls and indicators

The module is equipped with a power on/off switch and with a power on indicator.

Configuration

The AIM provides the interface between an RS-232-C compatible asynchronous DTE through its AILC.

The connection to the AILC is made via a miniature 6-position jack mounted on the rear of the housing. The module is equipped with a 7 ft (3.1 m) 6-conductor cord that is terminated with miniature 6-position plugs on each end. The connection to the 110/220 V ac transformer is made with a 7 ft (3.1 m) 2-conductor cord that is attached to the rear of the unit.

The AIM can only be connected to the AILC. It cannot be connected to the DLC.

The AIM connects to the DTE through a 25-pin connector (that conforms to ISO-2110) that is mounted on the rear of the housing.

AIM can be connected in the back-to-back mode if the send pairs of one set are connected to the receive pairs of the other set and vice versa.

Asynchronous Interface Line Card

The AILC contains all the intelligence for the AIM. It is located in a PE shelf and is used with and encodes information streams received from the AIM. It routes this information through the Meridian 1 switching network to the called data facility (computer or terminal).

Note: The AILC may also be used to connect the Meridian 1 switching machine terminals, protocol converters, interface boards, X.25 gateways, and other data transmission devices that use an RS-422 compatible interface.

The AILC supports up to four AIM units. Each of the four channels has a microprocessor that emulates the ADM to the Meridian 1 system, a switching power supply, and other electronic components. The transmission between the AIM and the AILC conforms to EIA RS-422 standards.

Operating characteristics

The AILC communicates with DTEs that have the following characteristics:

Data Code	ASCII (ANSI standard X3.4)
Terminal	Asynchronous, Start-Stop (ANSI standard X3.15-1976)
Number of Bits	8-bits including parity
Parity	unchanged
Data Rate	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps
Stop Bits	2 bits for 110 bps, 1 bit for all other speeds

When installing or maintaining the AILC with either an AIM or Personal Computer Interface Card (PCIC), it is important to consider that AIM/PCIC to AIM/PCIC calling is not supported at 110 or 150 bps.

QMT11 ASIM

The Asynchronous Synchronous Interface Module (ASIM) looks very much like the AIM, but provides added dialing capabilities plus six data feature keys and associated lamps and data control switches.

The data control switches are in a recessed area covered with a flip-up lid. User instructions are provided on the underside of the lid. The controls allow the user to choose data mode and speed.

A 12-button dial pad plus feature keys and data status lamps are located in front of the flip-lid.

An SL-1 set or an NT-500 type set may be connected to the ASIM for making voice calls. The NT-500 type set may be placed on the top surface without blocking the dial pad or the feature keys.

The ASIM may only be desktop mounted and is used to originate or answer data calls. In the asynchronous mode keyboard or keypad dialing may be used. In the synchronous mode, only keypad dialing is permitted.

Features

The ASIM is a stand-alone module, equipped to transmit and receive data. It meets the DTE/DCE interface requirements of the EIA RS-232-C standard. The electrical characteristics of the interface to the DLC or to a 4PDLC port are the same as for the ADM. It cannot be used for modem pooling.

The Asynchronous ASIM transmits data at 110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 bps. When first turned on, ASIM selects a default of 1200, 2400, 4800, 9600, or 19200 bps as determined by the synchronous speed switch setting. If the switch is not set to any of these speeds, a default speed of 9600 bps is selected. Speeds and parity are then determined by an autobauding and autoparity feature.

The Synchronous ASIM transmits data at 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 40800, 48000, or 56000 bps. These speeds are selected by the synchronous speed switch setting.

A standard 500/2500 or SL-1 telephone may be plugged into the rear of the ASIM into the phone jack. This telephone then operates through the ASIM line cord to a standard 500 or SL-1 line card in the Meridian 1.

Controls and indicators

The module is equipped with a speed switch (synchronous), eight mode switches, a keypad dial, data status lamps, and feature/feature keys.

The recessed 8-position DIP switch provides for Hotline, Forced DTR, Manual/Auto Answer, Loopback, Async/Sync, HDX/FDX, Ext/Int Clk, and Modem/Network (the last four functions are not applicable with Asynchronous operation). The switches are set by the user to match the data setting of the DTE. Refer to [Table 2](#) for more details.

Note 1: When the ASIM is in the asynchronous mode, the Terminal setting enables the dialing menus, progress prompts, and other responses sent to the DTE. In this mode, DSR, DCD, and CTS are high at all times. When the call is disconnected, DSR, DCD, and CTS pulse to a space state for 200 msec and then return to a mark state.

Note 2: When the ASIM is in the asynchronous mode, the Host setting suppresses all prompts to the DTE. The implementation of this mode in the C or earlier vintage held DSR, DCD, and CTS high when the call was not established. The QMT11D vintage keeps DSR, DCD, and CTS low until the call is connected and then raises them high.

Note 3: When the ASIM is in the Hotline mode with Forced DTR on (VLL mode), the ASIM waits 1.5 seconds after a call is disconnected and then begins to use the Hotline mode continuously until the call is reestablished. It can be stopped by setting either the Hotline or Force DTR switch to the OFF position.

Note 4: When the ASIM is set in the VLL mode, Int Clk, Modem, and Sync setting, the Transmit Clock EIA lead (pin 15 of DB-25) continuously outputs the clock signal, regardless of the state of the call.

Note 5: Only one side of the data connections should have the Hotline or VLL turned on. Otherwise, both data modules will be trying to call each other and will never connect.

The function switches provide for Speed Call, Autodial, Modem Call, Ring Again and Release. These switches and the DDN switch (hookswitch) are used to originate and to answer data calls. The top Reserved key (the one under Ring Again) in conjunction with the “*” and “#” keys provide for the ASIM automatic relocation feature.

The definitions of the Data Status lamps are as follows:

Indicator	Description
CONNECT	The CONNECT LED lights when a call is connected from the Meridian 1 through the ASIM to the attached device.
DTR	The DTR LED lights to indicate that DTR is received from the attached device.
RD	The RD LED lights when data is received by the ASIM.
SD	The SD LED lights when data is transmitted by the ASIM.

Configuration

The ASIM provides the interface between an RS-232-C compatible asynchronous DTE through a DLC OR 4PDLC.

The connection to the DLC or 4PDLC is made via a miniature 6-position jack mounted on the rear of the housing. The module is equipped with a 7 ft (3.1 m) 6-conductor cord that is terminated with miniature 6-position plugs on each end.

The connection to the power supply (120 V 60Hz ac input) is made with a 5-conductor cord equipped with a connector that plugs into the main assembly of the ASIM.

The ASIM connects to the DTE through a 25-pin connector (that conforms to ISO-2110) that is mounted on the rear of the housing.

PC Interface Card

The Personal Computer Interface Card (QPC512) permits connection of an IBM Personal Computer or IBM Personal Computer XT directly to the Meridian 1 with standard twisted pair wiring. The card installs easily in the Personal Computer, allowing the computer to be connected to the Meridian 1 through a standard TELADAPT wall jack and the QPC430 AILC. The PC may then access local and remote terminals, personal computers, other computers, and databases using the Meridian 1 networking capability. The card transmits data to the AILC using the RS-422 data standard and functions with any Meridian SL.

The Personal Computer Interface Card User Guide (P0641829) provides installation and operating information.

Note: The Crosstalk XVI software is available as an option for use with the QPC512.

Protocol Converters

IBM users have traditionally been locked in to IBM. This meant that the 3270 family of display and controllers and coaxial cable distribution was necessary to access IBM hosts. Communication with non-IBM hosts from IBM Systems 34, 36, 38, and IBM 3270 terminal equipment was very difficult or impossible.

The Meridian 1 family of Protocol Converters are devices that enable ASCII terminals, printers and personal computers to communicate with IBM computers. Different makes and types of terminals can now be used in the IBM environment.

The System 36 Gateway and 3270 Protocol Converter provide a flexible, cost-effective alternative to an IBM system of dedicated terminals and controllers. In addition, the Hunting, Autodial, and Ring Again Meridian 1 data features may be used in establishing the data calls.

The protocol converter emulates an IBM cluster controller and can access a variety of IBM applications. ASCII terminals can now be connected to the IBM link using standard telephone twisted pair cable. The ASCII terminals may be located up to 4000 cable feet from the Meridian 1 or dialed in through a modem pool. The protocol converter may also be located 4000 cable feet from the Meridian 1 and a maximum of 50 cable feet from the IBM host for direct connections or unlimited with modem pairs.

This makes moves and changes less costly and the IBM user may now benefit from the added features of Ring Again, Auto Dial, Speed Calling, and other data call processing features.

The Meridian 1 Protocol Converter is 12 in (305 mm) long, 14 in (356 mm) wide, 4.5 in (115 mm) high and weighs 8 lb (3.6 kg). It operates in an office environment of 26°F to 91°F (10°C to 35°C) with a 20 to 80% relative humidity. It requires a 110 V ac, 60 Hz, 1 amp circuit. It can be mounted in the MCDS cabinet, in a standard EIA 19 inch rack or may be ordered as a desk-top module. It is connected to the Meridian 1 through an AILC.

The converter provides asynchronous ports for eight logical units: seven asynchronous ports and one dynamic printer port. A logical unit is assigned to each of the seven physical asynchronous connections. The eighth logical unit is a printer port that can be dynamically assigned to auxiliary ports associated with CRT connected to the seven asynchronous physical ports. The ports operate at speeds of 300, 600, 1200, 2400, 4800, or 9600 bps.

The converter provides one synchronous, full duplex/half duplex port that supports direct FEP connection (built-in modem eliminators) or remote connection via dedicated or dial up modems. This port provides clocking speeds of 1200, 2400, 4800, or 9600 bps and multi-drop configuration over private lines.

There are presently three basic versions available:

- The Meridian 1/74 Protocol Converter is an ASCII to SNA/SDLC (PU type 2) device that emulate the IBM 3274 and 3276 controllers.
- The Meridian 1/71 Protocol Converter is an ASCII to BISYNC device that emulates the IBM BSC 3274 controller.
- The Meridian 1/50 Protocol Converter (also called System 36 Gateway) is a device that emulates ASCII to SNA/SDLC for IBM System 34, 36, or 38.

A detailed Technical Reference Manual, an Operator's Guide and a User's Quick Reference Guide are available for each member of the family. These documents provide information for ordering, installation, operation, maintenance, troubleshooting, debugging, and diagnostics.

These manuals also provide a partial list of the ASCII terminals and printers that are supported, plus cross-reference sheets of keyboard emulations for those terminals.

Multi-Channel Data System

The MCDS is designed for use in computer rooms to provide rack mounted ADM-like asynchronous capabilities for interfacing multiple computer ports to the system. It consists of a shelf, power supply, a maximum of eight interface cards, backplane, patch panel (optional), and cabinet (optional).

The interface between the MCDS and the computer ports must conform to the EIA RS-232-B/C specifications.

Incoming Asynchronous calls to the MCDS may originate from QMT7, QMT9, or asynchronous QMT8s that use full/half duplex mode of operation and operate with data speeds of 110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 bps. The MCDS interface card (AC) only supports data terminals that use 7-bit ASCII or 8-bit EBCDIC code 1 or 2 stop bits with odd or even or no parity.

Asynchronous Card

The 4-port MCDS-AC is located in the MCDS cabinet and supports four computer ports (or any other device that requires answer only). It provides the drivers and receivers required to meet the electrical interface specifications of the RS-232-C EIA standard. The MCDS-AC provides the same functions as four stand-alone ADMs.

The controls and indicators located on the circuit pack are described in [Table 3](#).

Table 3
MCDS indicators and switches

Indicator	Description
CONN	The CONN LED is located on the MCDS-AC. It lights when a call is connected from the Meridian 1 through the card to the attached device.
DTR	The DTR LED is located on the MCDS-AC. It lights to indicate that DTR is received from the attached device or forced ON at the MCDS-AC.
RD	The RD LED is located on the MCDS-AC. It lights when data is received by the card.
SD	The SD LED is located on the MCDS-AC. It lights when data is transmitted by the card to the far end.
POWER	The POWER LED is located on the front panel of the MCDS power supply. It lights when the ON—OFF switch is operated to ON
ON—OFF	The POWER switch is located on the front panel of the MCDS power supply. It is used to turn the power supply on or off. The switch should be OFF when inserting or removing the supply from the shelf.
Voltage Test Points	The VOLTAGE TEST POINTS are jacks that are located on the front panel of the power supply. They provide test points to verify the + 5, + 12, + 9, and –9 V that are supplied by an energized power supply.
PORTS	The port designations, located on the front panel of the power supply, provide legends for the MCDS-AC located in the right half of the shelf.

MCDS Power Supply

The off-line switched-mode power supply, located in the center of the MCDS shelf, provides multiple, regulated, and protected DC voltage to the MCDS backplane. It supplies steady-state 140 watt multiple, regulated, and protected DC voltage to the backplane from 120 V ac 60 Hz input. Each shelf requires 1.7 A from the 120 V input.

Spectron Patch Panel

This optional patch panel is wired between the interface card ports and the computer ports to provide a convenient means of rearranging interconnections and for maintenance diagnostics.

X.25 Gateway

The X.25 Gateway is a Packet Assembler/Disassembler (PAD) that provides an interface between asynchronous (start/stop) ASCII devices and packet switched equipment. The X.25 Gateway PAD supports the X.25 synchronous interface and conforms to all applicable international standards, including X.25, X.3, X.28, and X.29.

The X.25 Gateway PAD is 10.5 in x 16.75 in x 5.25 in (263 mm x 419 mm x 132 mm) and may be mounted in 19-inch frames or used as a stand-alone desk top unit.

The X.25 Gateway provides a cost effective communication link between the Meridian 1 and various X.25 networks. This allows various non-compatible computer systems to communicate with one another.

The PAD provides for 8 or 16 asynchronous ports (RS-422 interface) that connect to ports of an Asynchronous Interface Line Card (AILC) and two synchronous trunk lines (RS-232-C/V.24 interface) that connect to Public Data Networks (PDN) or to private data networks. The asynchronous ports operate at 300, 1200, 2400, 4800, 9600, and 19200 bps. The two synchronous trunk lines operate at 1200, 2400, 4800, 9600, and 19200 bps.

The X.25 Gateway permits building what appears to be a private data network by using PDN services and a network of remotely located Meridian 1s. The computer systems connected to the Meridian 1 may communicate together through the network. This emulation of a private data network can be expanded to include stand-alone computers and access to services of time-shared systems and large public databases, i.e., Dow Jones, Dun and Bradstreet, the Source, and industry-specific data bases.

Configurations

ASCII workstation to PDN With this configuration, the PAD provides the Meridian 1 connected workstations with X.25 access to the PDN. The Meridian 1 is used as a workstation, and/or asynchronous host port concentrator, that allows workstations to contend for one of the 8 or 16 asynchronous ports on the PAD and to access one of the two X.25 synchronous links.

ASCII workstation to private switched network In this instance, the PAD is configured to provide the Meridian 1 workstations with access to a private packet switched data network. Two or more Meridian 1 switches can be interconnected by the X.25 links. Permanent virtual circuits (PVC) or a dedicated line can be used to form a private data network.

ASCII workstations access to multiple networks The Gateway supports two links and allows simultaneous connections to two PDN or private networks. The Gateway emulates the connection procedures (user interface) of the major North American, European, and Japanese networks such as GTE/Telenet, Tymnet, Datapac, UK PSS, Transpac, Uninet, Datex-P, and DDX.

Figure 6
Typical Multi-Channel Data System

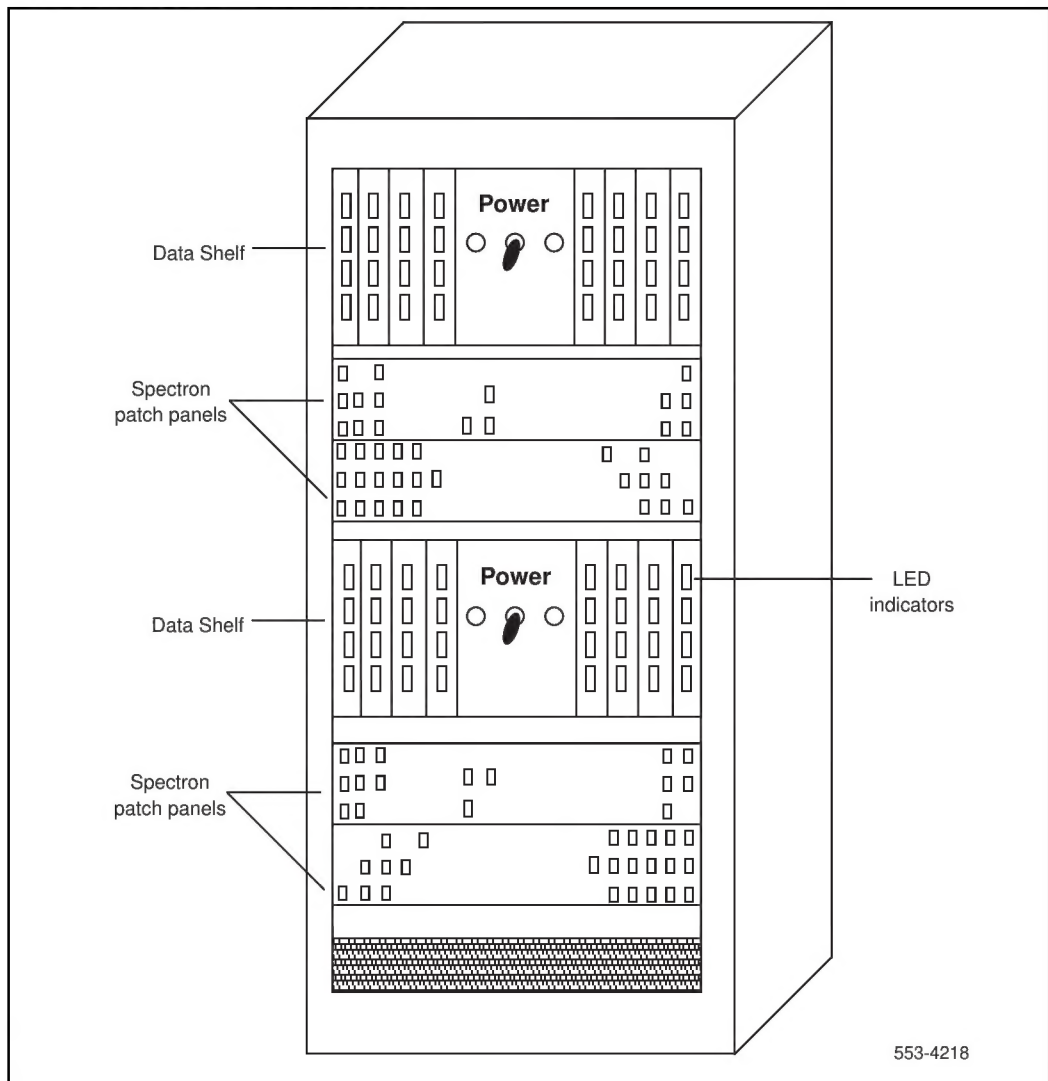


Figure 7
ADM Controls and Indicators

